

DEP



citizens' bulletin

TELEPHONE 566-3489 · ELIZABETH JESTER, EDITOR · VOLUME 1 NUMBER 3 · DECEMBER 1973

THE ENERGY CRISIS ARRIVES

DEP has granted the Connecticut Light and Power Company and the Hartford Electric Light Company (member companies of Northeast Utilities) a variance from Connecticut's air pollution regulations to insure the continued generation of energy in the state.

The variance was, however, accompanied by strict limitations and a warning that the consequences for the quality of air in the state may well be severe.

Eckardt C. Beck, DEP Deputy Commissioner for Environmental Quality and hearing examiner for the application granted the variance for a period not to exceed 120 days. The variance will terminate sooner if an adequate supply of low sulfur fuel is assured.

By the terms of the variance, the sulfur content of fuel oil is not to exceed 1.25% by weight - Dry Basis (Connecticut regulations currently set a limit of .5%). The sulfur content in coal shall not exceed an average of 2% (Dry Basis) and in no event shall any portion be in excess of 2.5%. The ash content of any high sulfur oil or coal shall not exceed an average of 12% by weight, and in no event shall exceed 15%.

The variance conditions that the companies shall exercise their best efforts to obtain the low sulfur fuel specified in the Air Regulations or to find the fuel with the lowest possible sulfur content. A weekly report to the hearing officer must detail such efforts, and the chemical and physical properties of any high sulfur fuel actually burned. The report must be available for public inspection (Room 111, DEP).

By December 6, the Northeast companies, in consultation with DEP and any intervenors who wish to participate, must prepare a list of their fuel burning facilities showing the order in which they will switch from low to high sulfur fuel use. The list is subject to the hearing officer's approval, and shall reflect consideration given to minimizing adverse effects on air quality and public health, and disruptions of power caused by the switch in fuels.

High sulfur coal may be burned in Company Units 1 and 2 in Middletown and Unit 5 in Montville if the supply of fuel oil falls below a 25 day supply, or the suppliers state to the Companies and the hearing officer that adequate supplies of fuel oil to maintain a 25 day supply will not be delivered within 7 days. Coal may be used at other facilities in accordance with the priority list if supplies fall below a 25 day level after the previous conversions cited.

By December 15 the Companies in consultation with DEP and any intervenors who elect to participate must submit for the hearing officer's approval, a plan for monitoring the ambient air concentrations of sulfur oxides and particulates in the state.

The Companies must maintain a supply of low sulfur fuel oil adequate for a five day period, and use the low sulfur fuel if any air pollution emergency episode reaches a Stage 1 level (advisory of threatening atmospheric conditions). Nothing in the variance request exempts the Companies from adherence to the Emergency Episode plan.

The companies must, by the terms of the variance, continue and expand their energy conservation efforts, requesting all industries and commercial customers to reduce their energy consumption by 10 - 15% and assisting them in doing so. The Companies must also expand their conservation advertising program directed at residential energy users.

They must fund research into processes not already under study by others which would mitigate adverse effects of sulfur dioxide and particulate emissions, such as stack-gas cleaning processes and coal gasification; they must submit to the Working Task Force described below a report on such research by April 1, 1974.

A variance to sell and deliver fuel in amounts specified above was granted to Amerada Hess Corporation and other fuel suppliers, and Mr. Beck recommended to the DEP Commissioner the establishment of a Working Task Force to examine the long term

availability in Connecticut of fossil fuels and the feasibility of stack-gas cleaning processes. Mr. Beck recommended that the Task Force be composed of technically qualified representatives of DEP, the Public Utilities Commission, the Companies and the intervenors, that the views of interested public be solicited; that monthly progress reports be filed beginning January 1, 1974, and a final report April 1, 1974.

If the fuel suppliers cannot supply fuel of the content specified in the variance and document their inability to do so satisfactorily, the hearing officer may modify the variance to allow the companies to burn fuel oil with sulfur content no higher than 2.5% by weight (Dry Basis) or, if cause is sufficient, even higher.

The hearings on the variance request will be resumed December 17, to discuss the report due December 6 and the formation of the Working Task Force.

BUT WE'VE COME A LONG WAY

The variance must, in DEP's opinion, be granted, but the tradeoff of energy and clean air is an unhappy one to make. Connecticut's air quality has improved greatly since the state's air quality implementation plan took effect, and the improvement has been in large part due to the controls on high sulfur fuel. It is useful at this point in time to look at what Connecticut has gained from the low sulfur regulations, to see what we must - temporarily - give up.

Sulfur oxides are among the most damaging and ubiquitous air pollutants. Their primary source is the combustion of fuel. Almost all fossil fuels contain sulfur; when these fuels are burned, the sulfur combines with oxygen to produce gases. These gases are pollutants, and are particularly dangerous when they act synergistically, that is, in combination with other pollutants commonly present in the atmosphere, such as particulate matter (smoke, dust, fumes). A study by the Federal Environmental Protection Agency (EPA) estimated that in 1968 sulfur oxides were responsible for 50% of the total air pollution damages to the nation, including more than \$3 billion in health-related expenses. This does not take into account other types of damage, to vegetation -- particularly to certain crops -- and to other valuable natural resources. For example, studies have shown an increase in the acidity of rainfall which impacts on forest growth and development and on water quality; these effects have been observed in the northeastern United States in the White Mountains and in upstate New York. Sulfur oxides can eat away iron and steel, corrode marble, cut down visibility and limit sunlight.

The 1970 Clean Air Amendments mandated the Federal EPA to set national air quality standards for pollutants that adversely affect human health and welfare and required each state to adopt and enforce plans to achieve and maintain those standards. The primary standard must protect human health, including the health of those segments of the population most susceptible to damage; the young, the aged, those suffering from respiratory illnesses such as asthma, bronchitis, emphysema, etc. This primary standard must be achieved as expeditiously as possible but in no case later than July, 1975. The secondary standard, set at a level to protect human welfare (i.e., to prevent economic effects from damage to materials and vegetation) must also be achieved as expeditiously as possible, within a time judged reasonable by the Federal EPA.

Control Methods:

There are two ways to control the emission of sulfur oxides into the atmosphere: installation of control equipment that removes sulfur oxides from the stack gas, or limitations on the sulfur content in fuel. Connecticut's regulations allow both methods. Fuel users can burn fuel of any sulfur content as long as the sulfur oxide emissions from the stack are controlled. Few users tend to take this option, primarily because capital costs are involved; most prefer to utilize low-sulfur fuel.

Costs and Benefits:

To date, Connecticut citizens have benefited in many ways from lessened sulfur oxide levels in the air. While the higher price for low sulfur fuel is often passed on to the consumer, the savings to each citizen in the form of reduced medical bills for respiratory illness, reduced loss of working time and lessened damage to crops and materials are substantial. Reductions in physical discomfort, improved visibility,

healthier vegetation, and general aesthetic gains are harder to measure, but figure importantly in any calculation of pollution reduction benefits.

Additional Benefits:

Statewide application of the .5% sulfur restriction has provided two important and largely unanticipated additional benefits. First, not only are federal standards met in the dirtiest or "hotspot" areas of the State, but a significant margin has been created for growth in population, industry and related services elsewhere in the State without coming into conflict with federal and state air quality requirements, including non-degradation provisions.

Second, the .5% heavy residual (#6) oil has certain different physical and chemical characteristics from higher sulfur fuel, resulting in a lower ash content. Therefore, when it is burned, it generates significantly lower particulate emissions. Reduction of particulates in this manner provides in effect another air pollution control technique much less expensive than traditional "add-on" capital equipment.

Improved Air Quality:

Adoption and enforcement of the .5% sulfur content regulation has already resulted in a steady improvement in the quality of Connecticut's air. While the prohibition on burning fuel with more than .5% sulfur content did not go into effect until April 1, 1973, many users started to burn the .5% fuel earlier, at about the September 1972 deadline for the sale of higher-sulfur fuel. In little more than a year, concentrations of sulfur oxides have fallen by approximately 50%, or about 67,000 tons annually.

We need energy; therefore the department has had to trade some of the clean air benefits gained by low sulfur regulations for more energy. It does so, however, only temporarily, and conditioned by many requirements. It is hoped that these requirements will prevent a conflict between two such basic needs in the future.

SAVE ENERGY!

The energy crisis is serious and it will not be short lived. If you haven't seen details on ways to save energy (and incidentally, money) you can send for the State of Connecticut Fuel Conservation Guide, or the more complete "Citizen Action Guide to Energy Conservation," one of the best on the subject to date (addresses on publication list).

While you wait for your guides to arrive, the following charts should help you reduce your consumption.

HOME HEATING

Some estimated savings from energy conservation measures^{a)}

CONSERVATION MEASURE	MILD CLIMATE Example: Atlanta, Georgia (2600 DEGREE DAYS)				MODERATE CLIMATE Example: New York City Area (4900 DEGREE DAYS)				COLD CLIMATE Example: Minneapolis-St. Paul, Minnesota (8000 DEGREE DAYS)			
	ANNUAL DOLLARS SAVED ON FUEL				ANNUAL DOLLARS SAVED ON FUEL				ANNUAL DOLLARS SAVED ON FUEL			
	ENERGY SAVED (Billion Btu)	GAS	OIL	ELEC- TRICITY	ENERGY SAVED (Billion Btu)	GAS	OIL	ELEC- TRICITY	ENERGY SAVED (Billion Btu)	GAS	OIL	ELEC- TRICITY
CHANGE OF HABITS												
Set back thermostat at night 75°F. to 67½°F.	12	\$12	\$18	\$41	14	\$15	\$21	\$42	15	\$16	\$24	\$51
Set back thermostat during day 75° to 70°F. and at night 75°F. to 67½°F.	31	33	48	110	36	38	55	110	40	42	62	131
SMALL INVESTMENT												
Weatherstrip doors and windows	7	7	10	(see note b)	10	11	16	(see note b)	12	12	18	(see note b)
Add storm doors and windows.	13	21	21	45	24	34	37	81	37	48	58	126
LARGER INVESTMENT OR NEW CONSTRUCTION												
Insulate ceiling—6 inch glass fiber.	7	12	12	25	13	19	20	45	20	26	32	69
Insulate walls—3½ inch glass fiber.	11	17	17	37	19	28	30	65	30	39	47	102
Insulate floor—foam with air gap.	17	11	27	24	15	21	23	49	23	29	35	77

NOTES: a. These are examples which would apply to a "nominal" house of 1500-1800 sq. ft. Annual savings are listed and are not necessarily additive. Dollar savings were estimated on the basis of typical blocked rate structures for gas and electricity. Savings listed are fuel bill savings only and do not take account of investment costs. Some of the measures listed do not pay for themselves in mild climate with gas heat.

b. The electrically heated home is assumed to be weatherstripped and better insulated when constructed.

Estimated Power Consumed by Home Appliances in a Year

	Average wattage	Estimated kilowatt hours consumed annually		Average wattage	Estimated kilowatt hours consumed annually
Food Preparation			Comfort Conditioning		
Blender	386	15	Air Cleaner	50	216
Broiler	1,436	100	Air Conditioner (room)	1,566	1,389
Carving Knife	92	8	Bed Covering	177	147
Coffee Maker	894	106	Dehumidifier	257	377
Deep Fryer	1,448	83	Fan (attic)	370	291
Dishwasher	1,201	363	Fan (circulating)	88	43
Egg Cooker	516	14	Fan (rollaway)	171	138
Frying Pan	1,196	186	Fan (window)	200	170
Hot plate	1,257	90	Heater (portable)	1,322	176
Mixer	127	13	Heating Pad	65	10
Oven, Microwave	1,500	300	Humidifier	177	163
Oven, Self-cleaning	4,800	1,146			
Range	8,200	1,175	Health & Beauty		
Roaster	1,333	205	Germicidal Lamp	20	141
Sandwich Grill	1,161	33	Hair Dryer	381	14
Toaster	1,146	39	Heat Lamp (infrared)	250	13
Trash Compactor	400	50	Shaver	14	1.8
Waffle Iron	1,116	22	Sun Lamp	279	16
Waste Disposer	445	30	Tooth Brush	7	0.5
			Vibrator	40	2
Food Preservation			Home Entertainment		
Freezer (15 cu ft)	341	1,195	Radio	71	86
Freezer (Frostless 15 cu ft)	440	1,761	Radio/Record Player	109	109
Refrigerator (12 cu ft)	241	728	Television (b&w)	237	362
Refrigerator (Frostless 12 cu ft)	321	1,217	Television (color)	332	502
Refrigerator/Freezer (14 cu ft)	326	1,137			
(Frostless 14 cu ft)	615	1,829	Housewares		
			Clock	2	17
Laundry			Floor Polisher	305	15
Clothes Dryer	4,856	993	Sewing Machine	75	11
Iron (hand)	1,008	144	Vacuum Cleaner	630	46
Washing Machine (automatic)	512	103			
Washing Machine (non-automatic)	286	76			
Water Heater (standard)	2,475	4,210			
Water Heater (quick-recovery)	4,474	4,811			

1,000 watts = 1 kilowatt hour
100-watt bulb burning 10 hours = 1 kilowatt hour

Source: The Electric Energy Association.

The New York Times/Nov. 24, 1973

SAVE ENERGY - STABLE YOUR CAR

Automobiles are one of our biggest energy consumers and gasoline will become scarcer as the nation's fuel industries turn from production of gasoline to that of home heating oil. Using mass transit or carpooling will save energy in a very significant way.

If you wish to carpool, and live or work in the New Haven or Hartford area, several local groups and the Department of Transportation have devised a program to match up car poolers. WELI and the Triple A in New Haven, and WPOP in Hartford (the ALA auto club is also investigating such a program) are printing questionnaires which commuters may complete and return to the designated address. The completed questionnaires will be forwarded to DOT to be run through the computer and matched with those of other aspiring carpoolers. The forms for the New Haven area are available from Triple A Commuter Center, Box 2011, New Haven 16521. Those for the Hartford area may be picked up at any office of the Hartford National Bank. Hartford Insurance agents throughout the state will also carry the forms. DOT can also supply mass transit schedules for particular areas; write to William E. Keish, Jr. at DOT, P.O. Drawer A, Wethersfield, Conn, 06109 specifying the area in which you wish to travel.

HOW MUCH DO YOU USE?

And while you're saving all the energy you can, you might as well figure out just how much energy you use.

Hopefully, an opportunity such as this to be energy conscious won't come too often, so you should take advantage of it to mend your ways. Don't forget a savings in energy is usually a direct savings in money, and once you've computed how much

energy you actually do use, and found it's not as painful as you thought to reduce your usage, you might as well continue on your new path. The energy crisis is not by any means solely a product of the Middle East war; as our energy demands have doubled every ten years, our society has raced headlong toward the crisis we now endure. Predictions of such a crisis have come from many quarters, for many years, but we chose not to heed the warnings until the realities were dramatically forced upon us. Rather than rock along from crisis to crisis, we can, with a little planning, not only foresee, but forestall emergencies. Individual citizen action is not the total answer to the energy dilemma, but in the final analysis, each and every energy decision is made by an individual, somewhere, and our current crisis is only an aggregate of individually made poor decisions.

The following text, adapted from a December 1972 Massachusetts Audubon Society newsletter article written by Dr. James MacKenzie, will allow you to compute your energy usage and give you a basis on which to plan your own energy policy.

UNIT OF ENERGY

It is useful, particularly in making comparisons, to express all energy consumption in a common unit. We shall use the British thermal unit, or Btu for short. A Btu is the amount of heat (i.e. energy) needed to raise the temperature of two cups of water by one degree Fahrenheit. It is a small energy unit; a few examples should give you a feeling for its size. Burning a pound of wood yields about 7,000 Btus of heat, a pound of coal yields about 13,000 Btus. A gallon of gasoline yields about 125,000 Btus. The food consumed by the average American supplies him with about 3,000 calories of energy, equal to about 12,000 Btus. (A pound of coal would be more than adequate to "fuel" a person for a day but would of course lead to the world's worst case of indigestion). Economically speaking, costs are usually computed for a million Btus of a given form of energy since the costs normally fall in the range of a dollar or two per million Btus.

USES OF ENERGY

The homeowner's direct use of energy can be divided into two major uses: residential and transportation. On a national basis, homes consume about 20 per cent of all energy and transportation about 25 per cent.

TRANSPORTATION

For most people, transportation is synonymous with the automobile. Cars account for over 86 per cent of all intercity passenger miles; airplanes are next and account for 9 per cent. Almost 82 per cent of all workers use cars to get to work, and most recreational and shopping trips employ cars. In estimating transportation energy use we will therefore restrict ourselves to automobile use only, since, unfortunately for the energy consumed, most people travel by automobile rather than by public transit.

Your personal computations begin by marking off a section of your notebook for transportation records and constructing a table similar to Table I.

You should record the following information for each purchase: date, gallons purchased, cost, any other costs (oil, etc.)

As an example of typical transportation numbers we have entered into Table 1 our own gasoline use for September 1972. We consumed 55 gallons of gasoline at a cost of \$20.30, plus a quart of oil. Notice that we consumed almost 7 million Btus (Line 6) at an average cost of \$2.96 per million Btus (Line 5). (Since we also used public transportation during this period our overall energy consumption for this period may have been 50 to 100 per cent larger than the total computed here.)

After a few months of record keeping you will have a good idea of how much energy you use for transportation and will be able to compare this energy use with other uses such as home heating or electricity use. Our own records indicate that we spend about \$250 per year for gasoline alone and consume about 85 million Btus in operation of our car.

RESIDENTIAL USES OF ENERGY

Homes may have as few as one source of energy (those that are all electric) or as many as three (e.g. electricity, gas for cooking, and oil for heating). According to a recent study of energy uses the following breakdown describes the pattern of use in 1968.

Energy Used in the Home

Space Heating	57.5%
Water Heating	14.9%
Cooking	5.5%
Refrigeration	6.0%
Air Conditioning	3.7%
Television	3.0%
Clothes Drying	1.7%
Food Freezing	1.9%
Other	5.8%
Total	100.0%

Obviously, space heating (that is, heating of the home) represents the largest single use, amounting to almost 60 per cent of all residential energy use. Because of this we can expect the highest total energy demands to occur (at least in a northern state such as Connecticut) during the winter months. Water heating, cooking and refrigeration represent about 25 per cent of domestic energy consumption. These three uses would be expected to be fairly evenly distributed throughout the year.

ELECTRICITY

All homes consume electricity, though the amounts may vary dramatically depending on the other sources of available energy. In Table 2 we show a simple way of recording electricity use. The unit of electricity consumption is the kilowatt-hour; the total number of kilowatt-hours consumed is recorded on your bill. The only two numbers needed from your bill are the total cost of electricity (for Line 3) and the number of kilowatt-hours (for Line 2).

We have entered into Table 2 the data for our own electricity use for the two-month period, July-August, 1972. In our home we use natural gas for cooking and heating and use electricity only for lighting and appliances. There are several interesting comparisons to be made between our use of gasoline and electricity. First, we consumed more than eight times as much energy in the form of gasoline as we did in the form of electricity (neglecting the 65 per cent thermal pollution losses at the electric power plant). And second, the cost of a million Btus of electricity (\$12.40) was more than four times the cost of a million Btus of gasoline (\$2.96).

During the past year we consumed 4,084 kilowatt-hours of electricity, equivalent to 14 million Btus. The total cost was \$158. We tend to be careful in our home about the use of electricity and have been able to cut our monthly use (compared with the previous year) by turning out lights when they are not needed. We reduced our use of electricity despite the addition of an electric ice cream maker and a dishwasher (whose final energy-consuming drying cycle we never use.)

NATURAL GAS

If you use natural gas only for cooking and/or hot water your bills will be fairly constant throughout the year. If you heat with gas, however, your bills will be substantially higher during the winter. In Table 3 we show a way of recording your use of natural gas. The unit of use is called a therm, though this term usually does not appear on the bill. One therm is equal to 100,000 Btu, and is equivalent to 100 cubic feet of gas, the symbol of which (ccf) may appear on your bill.

We have entered our consumption data into Table 3 for a summer period (July-August 1971) and a winter period (January-February 1972). During the summer period we consumed about 4 million Btus per month for hot water and cooking. For a full year this would yield 45 million Btus. Our winter peak demand was six and one half times greater than our summer demand. The difference in costs between summer and winter rates reflects the decreasing block rate structure common to both the gas and electric

industries. Under such rates the costs of additional gas or electricity decrease as you use more and more. (Some environmentalists contend that these rate structures encourage large users to be wasteful of energy use since the costs are so low for large consumers.)

During the past year we consumed in our home 166.6 million Btus of gas for heating, cooking, and hot water, for a total cost of \$332. We estimate that $48/166 = 29$ per cent of our gas use was for cooking and hot water, and the remaining 71 per cent for heating.

HOME HEATING OIL

If you use oil for heating you will find the same ~~peaking~~ of use during winter that occurs with gas heat. In Table 4 we show a simple way of recording oil use. We have entered a hypothetical oil delivery of 150 gallons at a current cost of 19.9¢ per gallon, or \$1.43 per million Btus. As with natural gas, you will have to keep records for a complete heating season before your total heating costs and requirements can be determined.

PUTTING IT ALL TOGETHER

After you have kept an energy diary for a year you will be able to examine your total annual uses by various sectors, and the costs of the relative forms of energy. We have done this for our own uses and summarize the results below.

Breakdown of Annual Energy Use

	Energy (million Btus)	Cost
Transportation (gasoline)	85	\$250
Residential		
Electricity	14 (8%)	\$158
Home Heating	119 (66%)	\$332
Hot water & Cooking	48 (26%)	
Sub Total	181 (100%)	
Total	266	\$740

It is interesting that electricity accounts for less than 10 per cent of our total residential energy use though it represents 1/3 of our total residential energy costs. The higher cost of electricity is somewhat offset by the higher efficiency with which it is used. Note that we have neglected the energy and costs of public transportation (the latter amounting to about \$200 per year for our family) plus all the peripheral costs of operating a car such as insurance, depreciation and maintenance.

Table 1 Gasoline Use

1. Dates	Sept 72
2. Gasoline used (gallons)	55
3. Cost of Gasoline	\$20.30
4. Cost per gallon (Line 3 ÷ Line 2)	
5. Cost per million Btus (Line 4 x 8)	\$2.46
6. Total Energy (Line 2 ÷ 8) (in million Btus)	6.9
7. Other Costs (oil, etc.)	90¢
8. Total Costs	\$21.20

Table 2 Electricity

1. Dates	Jo Aug 1972
2. Number of Kilowatt-hours	468
3. Total Cost	\$19.86
4. Cost per Kilowatt-hour (Line 3 ÷ Line 2)	4.23¢
5. Cost per million Btus (Line 4 x 293)	\$12.40
6. Total Energy (Line 2 ÷ 293) (in million Btus)	1.6

Table 3 Natural Gas

1. Dates	July-Aug 71	Jan-Feb 72
2. Gas consumed (therms, or ccf)	79	512
3. Total Cost	\$22.76	\$93.20
4. Cost per therm (Line 3 ÷ Line 2)	28.84	18.24
5. Cost per million Btus (Line 4 x 10)	\$2.88	\$1.82
6. Total Energy (Line 2 ÷ 10) (in million Btus)	7.9	51.2

Table 4 Home Heating Oil

1. Date of Delivery	6 Sept 72
2. Oil delivered (gallons)	150
3. Cost of oil	\$29.65
4. Cost per gallon (Line 3 ÷ Line 2)	19.94
5. Cost per million Btus (Line 4 x 7.2)	\$1.43
6. Total Energy (Line 2 ÷ 7.2) (in million Btus)	20.8

CALENDAR - Public hearings, deadlines for comment, noteworthy dates

Hearings may be rescheduled, or planned too late for the Bulletin publication date; this does not, therefore, pretend to be a complete or official list. It is wise to call and check scheduling before attending a hearing; for details call 566-4017 or number listed. Some hearings listed may be completed before you receive this Bulletin; they are included to provide a continuous record of department activities.

December 3 - 7:30 p.m. Hearing on application of the Town of Westbrook to conduct a regulated activity in Ecological Unit 45, Subdivision 2 on the north side of Seaside Avenue in Westbrook. Activity consists of installation of two sections of fifteen inch diameter drain pipes and headwalls within the established bounds of the wetlands. Written comments will be considered by the Commissioner if received within ten days after service of the proposed decision. All maps and documents available for inspection in Room 201, State Office Building, Hartford, TOWN HALL MEETING ROOM, BOSTON POST ROAD, WESTBROOK.

December 8 - 9:00 a.m. to 2:00 p.m. Litchfield Hills Regional Planning Agency sponsors the fifth annual Northwest Planning Conference "Who's Planning Your Future?" Workshop sessions to discuss existing planning efforts; area wide referendum taken. DEP Commissioner Costle will speak. For further details call 482-5575. NORTHWEST CONNECTICUT COMMUNITY COLLEGE, WINSTED.

December 13 - Deadline for comment on application of George Leblanc to construct, install and maintain a wood pier 28 by 5 feet, a wood ramp 26 feet long, a wood float 10 feet by 20 feet and 2 mooring piles in Bermuda Lagoon in Westport. Further information 566-5308.

December 13 - 1:00 -5:00 p.m. New England Citizens' Briefing by EPA, to celebrate its third anniversary. Co-sponsored by the Environmental Law Society of Harvard Law School. Discussions of air and water pollution control, energy problems, land use, categorical problems review. Keynote speaker, EPA Deputy Administrator John Quarles, AMES COURT ROOM (AUSTIN HALL), HARVARD LAW SCHOOL, CAMBRIDGE, MASS.

December 15. Deadline for comments on application of Fair-Chester Oil Co. to construct, install and maintain a 13 pile dolphin in the Byram River in Greenwich. For further information 566-5308.

December 17. Public hearings on Northeast Utilities request for a variance resume. See page 1.

December 20. 10:00 a.m. Hearing on application of Frank Hastings to discharge 1687.5 gallons a day of treated septic effluent and kitchen wastewater to the groundwater in the watershed of the Millbrook in Coventry. STATE OFFICE BUILDING, ROOM 129, HARTFORD.

December 20. 11:00 a.m. Hearing on application of Drazen Structures, Inc. to discharge 30,000 gallons a day of septic tank effluent to the groundwater in the watershed of the Hockanum River in Ellington. STATE OFFICE BUILDING, ROOM 129, HARTFORD.

December 20. 7:30 p.m. Hearing on application of D'Addario Construction Services to construct an asphalt batching plant in Milford. CITY HALL AUDITORIUM, MILFORD.

CONSERVATION COMMISSION AIDS

This supplement to the Citizens' Bulletin is devoted to a catalogue of information and services of value to conservation commissions and inland wetland agencies in Connecticut. Future issues will devote more space to the concerns of the commissions, in the belief that the commissions often occupy a pivotal role in local/state and even federal relationships and can be the focal point of environmental concern among local citizens.

The following information is not intended to be a complete handbook of services; it is rather a survey of currently available material in Connecticut. Additions to the list should be sent to the editor, and will be published in future issues.

THE PRESENT STATUS OF WETLAND AGENCIES AND CONSERVATION COMMISSIONS, NOVEMBER 1973

169 towns in Connecticut

86 have appointed an inland wetland agency

52 of these inland wetland agencies are conservation commissions solely

22 are composite inland wetland agencies, with representatives from several local boards

7 are planning and zoning or planning commissions

2 are the entire conservation and zoning commissions combined

1 is an environmental impact commission

1 is the flood and erosion control board

1 is the board of selectman

1 is the town council

9 have adopted wetlands regulations

PUBLICATIONS AVAILABLE

Publications are available from the addresses listed below; copies of each are on file at DEP in Room 110 and the public is welcome to study them there.

WETLANDS AIDS

From Water and Related Resources, DEP, Room 207, address on masthead

- Guidelines for implementation of regulations will be available upon adoption of DEP's regulations
- Inland Wetland Plants of Connecticut defines wetland types, roles, describes and illustrates wetland plants; bibliography on wetland plants
- Inland Wetlands and Watercourses Act, P.A. 155, passed in 1972 and amended in 1973
- Model municipal regulations implementing the inland wetlands and watercourses act
- Proposed Inland Wetlands and Watercourses Regulations of the DEP
- Sample Municipal Ordinances for implementing P.A. 155

From the DEP Natural Resources Center, Room 561, address on masthead

- Index of natural resource information for each town has been sent to the chairman of the local conservation and planning and zoning commissions.

From Connecticut Inland Wetlands Project, P. O. Box 124, Middletown, Ct. 06457 (tel. 347-1100)

- Administration Handbook for Inland Wetland Agencies 50¢ each plus 14¢ postage for one or two copies, 7¢ each additional two. Sample ordinance; recommendations on agency composition; sample regulations and applications; proposed activities on regulated areas; mapping resources for agencies.
- Implementation Aids for Inland Wetlands and Watercourse Agencies. Guide for inventorying inland wetlands by function and ecological type, framework to judge permit application procedure for handling permit applications.
- Inland Wetlands Project proposes to publish a review of applications for activities on wetlands and case studies; a review of mapping techniques; a study of the functions of wetlands. Details from the Project.

From the Connecticut Conservation Association, Bridgewater, Ct. 06752 (tel. 354-9325)

- Inland Wetlands. White paper detailing values, uses, functions of wetlands; includes short bibliography.
- Extensive bibliography on inland wetlands and fresh water ecology; send stamped, self-addressed envelope to CCA.
- Wetlands, Land Use and the Law. White paper detailing recent legal decisions which are setting the precedents for both wetlands regulation and land use policy in general. Also details Environmental Protection Agency policy on wetlands.

From Connecticut College, Connecticut Arboretum, New London, Ct. 06320

- Inland Wetland Plants of Connecticut \$1.00. Defines wetland types, roles, describes and illustrates wetland plants, bibliography on wetland plants.
- Preserving Our Freshwater Wetlands \$1.00. Arboretum Bulletin No. 17; articles on wetland values, ecology of wetlands in urban areas; legal action to establish natural areas, value of mud, model municipal ordinance.

From Soil Conservation Service, Mansfield Professional Park, Storrs, Ct. 06268

- A Guide for Streambelts - a System of Natural Environmental Corridors in Connecticut. Delineating water and water related land corridors which should be regulated for natural resource protection and intelligent land use.

LAND USE

The materials below relate for the most part to Connecticut and its special concerns. This is by no means an extensive land use bibliography - that is being compiled and will be available later. It is necessary to note, however, that Ian McHarg's Design with Nature and William Whyte's The Last Landscape are classic books in the land use field, and should be read for basic understanding.

- A Connecticut Soils Primer. From Cooperative Extension Service, College of Agriculture and Natural Resources, UConn, Storrs 06268.
- The Environmental Review Team Evaluation of Land Use Proposals by David Miller and Hugo Thomas. Details operation and natural resource factors considered by the Review Team. From Cooperative Extension Service, address above.
- Impact Zoning. A House and Home reprint on impact zoning system originated by Rahenkamp, Sachs, Wells and Associates of Philadelphia. From House and Home, 1221 Avenue of the Americas, New York City, N. Y. 10020.
- Impact Zoning: A Plan for Connecticut speech by Dan Lufkin. From DEP, Room 110, address on masthead.
- Know Your Land: Natural Soils Groups for Connecticut. From Cooperative Extension Service, address above.
- Land: A Resource or a Commodity. From Connecticut Conservation Association, address above.
- Land, the Most Enduring Gift by George Russell. From Room 110, DEP, address on masthead. Details various ways land can be preserved, text of public laws, sample easement.
- The Landowner's Conservation Guide. From the Farmington River Watershed Association, 195 West Main Street, Avon, Ct. 06001.
- Proposed - a Plan of Conservation and Development for Connecticut. Proposed land and water uses for the state; good maps. From Planning Section, Planning and Budgeting Division, Dept. of Finance and Control, 340 Capitol Avenue, Hartford 06115
- The Quiet Revolution in Land Use Control Council on Environmental Quality report on innovative state land use laws. Full Report \$2.75, summary 45¢. From U. S. Government Printing Office, Stock #4111-0006, 710 North Capitol Street, N. W., Washington, D. C. 20402.
- Shape Your Land Use Destiny. Process by which towns can save open space by thoughtful planning and economic considerations. Massachusetts Audubon Society newsletter article available from DEP, Room 110, address on masthead.
- Private Approaches to the Preservation of Open Land by Russell Brenneman. From Mrs. John Merrill, 13 Woodsea Place, Waterford, Ct. 06385. Paper bound \$5.00, hard bound \$6.00.
- The State Library contains a wealth of information, and sells topographical maps and many publications of concern to local commissions. For a list of 1973 publications write Sales and Publications, State Library, Hartford, Ct. 06115.
- United States Geological Survey publishes many reports with a variety of natural resource information. Publications list available; specify area or problem. 135 High Street, Hartford, Ct. 06115.
- Use of Natural Resource Data in Land and Water Planning by David Hill and Hugo Thomas, Bulletin No. 733. Details kinds and uses of basic natural resource data. From Conn. Agricultural Experiment Station, 123 Huntington Avenue, New Haven, Ct. 06512.

GENERAL AIDS

- A Guide for Connecticut Conservation Commissions by D. R. Miller and H. L. Leonard. From Cooperative Extension Service, address above.
- Connecticut's Natural Resources; a Proposal for Action by William Whyte. Proposals for programs to preserve the state's natural resources. From DEP, Room 110, address on masthead.
- Connecticut Register and Manual 1973. Every commission should have access to this. Historical, governmental information, biographies of Conn. leaders, description of state agencies, town officials, press lists, state institutions. From Publications Division, Secretary of State's Office, State Capitol, Hartford 06115.

TECHNICAL ASSISTANCE FROM THE DEPARTMENT OF ENVIRONMENTAL PROTECTION

- Information center, providing indexes of various services available throughout the state, activities and models from other states, Citizens' Bulletin providing current information. Contact Elizabeth Jester 566-4017.
- Natural Resources Center providing indexes of natural resource information available to each town (the information itself may be studied at the Center), workshops for each town across the state to train officials in the use of natural resource information (two years will be required to cover every town in the state - call the Center for the date for your town). Contact Natural Resources Center, 566-3540.
- Inland Wetlands Program, Water and Related Resource Division. Publishes materials listed under publications section, personnel ready to meet with town officials to advise and consult on local program formation, field work on high priority wetlands, two slide programs, one on wetland types and functions, one on inland wetland legislation, which a DEP staffer will show on request as time and scheduling allow. Director, Cynthia Ivey, 566-2642.

TECHNICAL ASSISTANCE AVAILABLE OUTSIDE DEP

- Soil Conservation Service doing detailed soils mapping of each town on a schedule to be completed in (approximately) 1978. Towns may request a streambelt system survey (backlog does exist). State Office in Mansfield, 429-9361 or call your district office.
- State Colleges (Central, Southern, Western and Eastern) will have a community assistance team - nucleus of 3 or 4 people on each campus - a geologist, hydrologist, ecologist, plus graduate students, to make up a community resource team. Mayors, conservation commissions, town managers were told of the teams' existence, and invited to submit problems from which the team has chosen 20 most inland wetlands related. Project funded from a grant from the U. S. Office of Education, distributed by the Connecticut Office of Aid to Higher Education. Contact Dr. Leon Gorski 225-7481 ext. 294.
- Connecticut Inland Wetlands Project, funded by a Ford Foundation grant, produces publications, does specific work with Mid-State towns, though glad to talk to any other towns with questions. They are also working with the Health Department, SCS, DEP and Yale School of Public Health to recommend revision of the health code to include wetland considerations. 347-1100.
- Environmental Review Team of the Eastern Connecticut Resource Conservation and Development Project. Team which, on a limited basis and upon request, assists towns and developers in the RC&D area to review the environmental impact caused by major residential, commercial and industrial projects. Personnel supplied by Cooperative Extension Service, DEP, Department of Health, U. S. Department of Agriculture, Soil Conservation Service, and the five area Regional Planning Agencies. Contact Barbara Hermann, Team Coordinator, 889-2324.
- Agricultural Extension Service offices and Soil Conservation District offices are located in each county, and offer aid and information on a variety of subjects; Regional Planning Agencies hold a wealth of information.

COURSES AND CONFERENCES FOR COMMISSIONS AND LOCAL DECISION MAKERS

- Cooperative Extension Service Center in Brooklyn running free course, 1 night a month for Windham County residents. Aimed at conservation commissioners, town managers, first selectmen, town attorneys, RPA people, health directors. Sessions already held covered wetlands mapping, plant identification, legal aspects, regulatory tools. Last session will be on January 17: David Tundermann, DEP Assistant Commissioner of Legal and Governmental Affairs, will talk on DEP's role, future of wetlands regulation. Donald Francis of the Extension Service is available to advise and consult on problems of residents in Windham County. Windham County Extension Service, Brooklyn, Ct. 06234, telephone 774-9600.
- Cooperative Extension Service Center in Litchfield is running a series of workshops for the 26 towns in Litchfield County. First sessions covered legal questions, administrative procedures, and a field identification trip; the last session on December 13 will feature Cynthia Ivey of the Department of Environmental Protection, Elizabeth Petrie of the Connecticut Inland Wetlands Project and a representative from a town which is already administering the local regulations to discuss local problems and procedures.
- Delineation of Wetlands will be the title as well as the subject of a conference at the University of Connecticut in Storrs on January 9th, from 8:30 - 4:30. Speakers will include DEP Deputy Commissioner Theodore Bampton on DEP's inland wetlands responsibilities; Dr. Joseph Larsen of UMass on Qualitative aspects of freshwater wetlands delineation in the Northeast; Dr. Lindo Dartelli of the Soil Conservation Service on using soil maps and delineating wetlands; Jack Jacobson of SCS on use of maps and cartographic techniques for wetlands mapping; Virginia Carter of the U. S. Geological Survey on use of remote sensing data in management of inland wetlands; Gunther Greulich of Boston Survey Consultants on problems of

boundary delineation; Russell Post, Jr. of Connecticut General Assembly Environment Committee discussing policy consideration of Connecticut's inland wetlands act and David Losee, attorney of Riverton, Conn. reviewing the constitutional aspects of Connecticut's wetlands legislation.

- Institute of Public Service at UConn, Storrs, will offer a Seminar in Environmental Planning and Management, a non-credit course for administrators and professional personnel from Connecticut towns and cities, regional and state agencies. 12 sessions cover use of natural resource data, erosion and sediment problems, inland wetlands, aesthetic principles, environmental and behavior interrelationship, DEP and local organization for environmental protection, noise pollution, the Environmental Review Team. Fee \$20; held at the Veterans Memorial Clubhouse, East Hartford, from March to June. For further information contact Associate Extension Professor George Murray. 486-2830.
- The Junior League of Bridgeport and the University of Bridgeport are co-sponsoring a course titled Land Use and Urban Design. Four sessions have already been held, and response has been greater than they anticipated; but interested people may audit the remaining sessions at \$6 a session. Remaining sessions: December 13, Analysis with Dr. Hugo Thomas from DEP, Dr. Chung, Professor of Economics, and John Bond from the Bureau of Outdoor Recreation. January 17 Interaction with Robert Redman, Dr. John Stolwijk and Zane Yost. January 31 Position with DEP Commissioner Douglas Costle, Paul Davidoff and Maurice Arnold (Bureau of Outdoor Recreation). February 14 Action. Each participant undertook a project, and these will be discussed. Course held from 9:15 - 11:15, in Room 107 of the Student Center, University of Bridgeport.

DEPARTMENT OF ENVIRONMENTAL PROTECTION
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